RPMSP Series Installation Guide

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1. Overview

Use this guide together with the User's Manual for complete installation, operation and maintenance information. This guide provides all the necessary setup information to successfully install any of the following *RPMSP Series projectors* in rear screen - lens horizontal or rear screen - lens vertical configurations:

- RPMSP-500Xe 38-GFX208-xx (0.7:1 lens)
- RPMSP-500Xe 38-GFX209-xx (1.16:1 lens)
- RPMSP-D100U 38-GFX210-xx (0.7:1 lens)
- RPMSP-D100U 38-GFX211-xx (1.16:1 lens)

In general, the following steps must be completed to successfully setup your projector:

1. Unpack the projector.
2. Choose the projector's configuration; lens-vertical or lens-horizontal.
3. Calculate throw distance, position and mount projector.
4. Connect sources.
5. Power projector on.
6. Adjust projection lens for focus and lateral image color.
7. Adjust software to optimize image on one or multiple screens.

It is recommended that you keep all manuals with the projector for quick and easy reference. *NOTES: 1) Unless otherwise stated, the information provided in this guide applies to all RPMSP projector models. 2) All illustrations are a graphical representation only and may not exactly represent your specific projector model. Use as reference only.*

Tools Required ➤

The following tools and hardware are required for projector installation:

- mounting hardware *(shipped with the projector)*
- #1 Phillips screwdriver
- assorted ball drivers *(provided in User's Kit)*
- User Manual and Installation Guide

2. Unpacking the Projector

The projector is carefully packaged in a way as to protect it from any unnecessary shipping damage.

When unpacking the projector:

- Remove all packaging material from around the projector. Make sure all vents are clear and no scrap pieces of material are lying in between modules.
- Check cable connections to ensure not became loose during shipment. Refer to Table 1. for your specific projector model if cables need to be reconnected.

Table 1. Cable Connections

➤ ***D100U models***

Electronics Module	Projection Head Module	Dual Lamp Module
J91 →	J90	
J94 →	J89	
	P114 →	P115

➤ ***500Xe models***

Electronics Module	Projection Head Module	Ballast Module
J91 →	J90	
J94 →	J89	
	J88	J102 to P103

3. Projector Configuration

The projector can be configured in two ways: with the lens at 0° (lens horizontal) or 90° (lens vertical). The latter is typically used in installations where a first surface optical mirror is used. Refer to the instructions for your specific model to change the configuration, if necessary.

⚠ WARNING

Projector must be powered down and unplugged before performing any setup or service procedure.

For RPMSP-500Xe ➤ *NOTE: You will need the two brackets shipped with the projector, to change the projector's configuration from lens horizontal to lens vertical.*

1. Disconnect cable connections made to the PHM.
2. Remove the lamp. See User's Manual for instructions.

3. Remove the cooling duct from the PHM. (Figure 1.)

(a) Disconnect the fan harness.

(b) Remove the top bracket to the lamp housing – 3 screws.

(c) Remove the 2 screws securing the cooling duct to the side of the housing.

4. Loosen the 2 captive screws on the rear mounting bracket (located just above the adjustment knobs). (Figure 2.)

5. Loosen the 2 screws from the front mounting bracket (with tabs).

6. Tilt the PHM up slightly, and pull it back just enough to unhook it from the two tabs on the front mounting bracket. Remove the PHM. (Figure 3.)

7. Remove the rear mounting bracket (3 screws) and the front mounting bracket (2 screws) from the adjuster top plate.

8. Replace the brackets removed in the step above with the new front and rear mounting brackets shipped with the projector. *NOTE: Use the locating pins on the adjuster plate to ensure proper placement of the brackets. See* Figure 4.

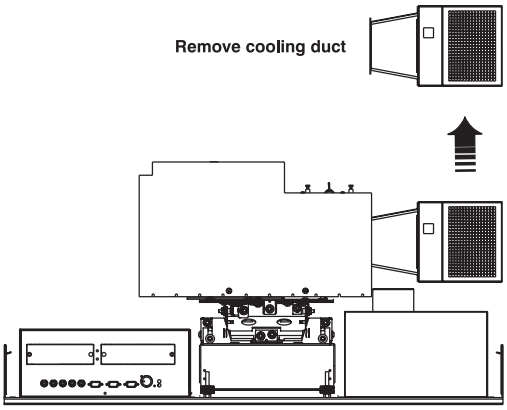


Figure 1.

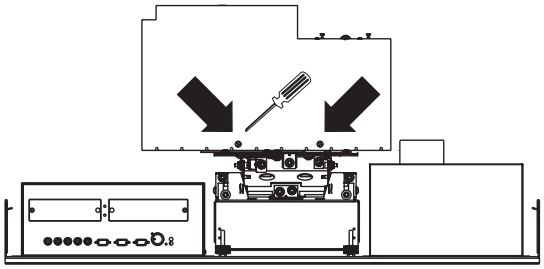


Figure 2.

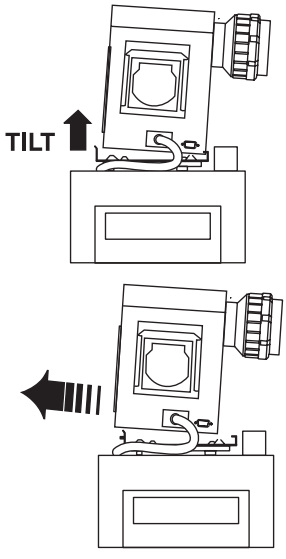


Figure 3.
Remove PHM module

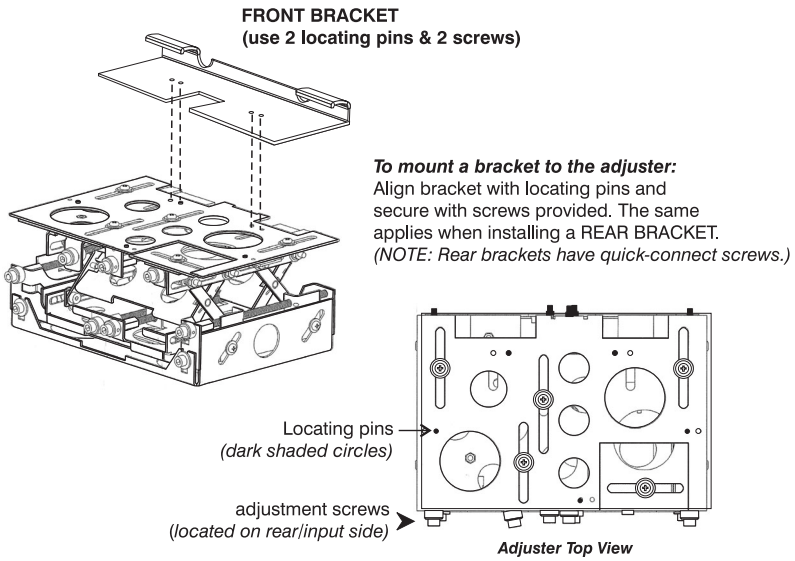

FRONT BRACKET
(use 2 locating pins & 2 screws)
To mount a bracket to the adjuster:
Align bracket with locating pins and secure with screws provided. The same applies when installing a REAR BRACKET.
(NOTE: Rear brackets have quick-connect screws.)
Locating pins
(dark shaded circles)
adjustment screws
(located on rear/input side)
Adjuster Top View

Figure 4. Mounting Brackets Required for Changing Projector Configuration

9. Flip the PHM so the lens is facing up in the lens vertical configuration. (Figure 5.)
10. Tilt the PHM up slightly and slide it forward until it engages with the two tabs on the front mounting bracket. (Figure 6.)
11. Lower the PHM into place and tighten the 2 screws on the mounting bracket to secure. (Figure 7.)
12. Re-install the cooling duct in new orientation. (Figure 8.)

(a) Remove the 4 screws securing the flange to the cooling duct. Turn the flange 90 degrees so the mounting holes used to secure the cooling duct assembly align with the mounting holes in the side of the lamp housing. Re-assemble the cooling duct assembly and slide it back into position. When the cooling duct assembly is inserted, the wire mesh side of the cooling duct should be facing out the rear of the projector, away from the screen.

(b) Install the lamp housing top plate - 3 screws.

(c) Install the lamp. Tighten 4 captive screws until the top of the lamp is flush with the housing.

(d) Re-connect the fan harness (spade connectors) to the fan using needle-nose pliers.

(e) Re-connect the cables disconnected between modules in Step 2. (Figure 9.)

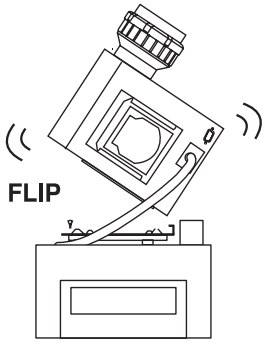


Figure 5. Flip PHM

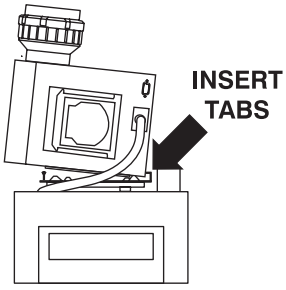


Figure 6. Install PHM

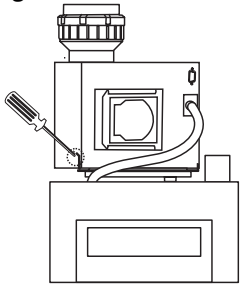


Figure 7. Tighten mounting screws

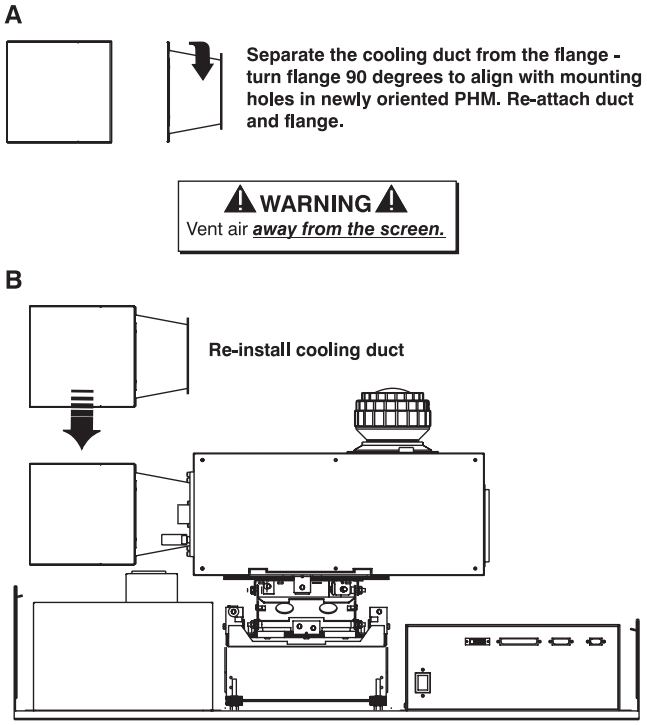

A
Separate the cooling duct from the flange - turn flange 90 degrees to align with mounting holes in newly oriented PHM. Re-attach duct and flange.
WARNING
Vent air away from the screen.
B
Re-install cooling duct

Figure 8. Install cooling duct

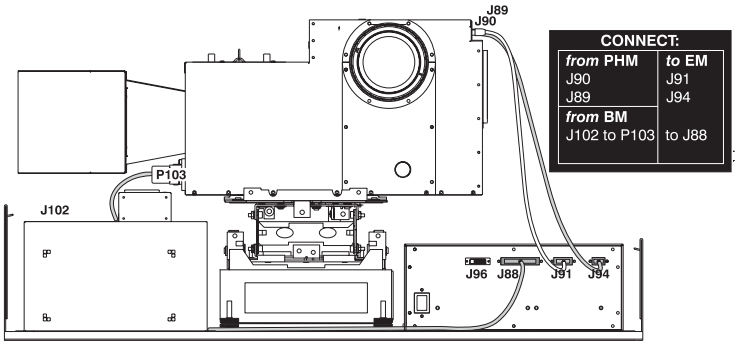


Figure 9.

13. Cover the two open slots in the PHM (where the lens-horizontal mounting brackets fit into the module) with the two all-black labels. Covering these slots will prevent any excess light from passing through and reflecting onto the optical mirror and screen used in typical lens-vertical rear projection applications. If not covered, the brightness and clarity of a displayed image may be affected. See Figure 10.

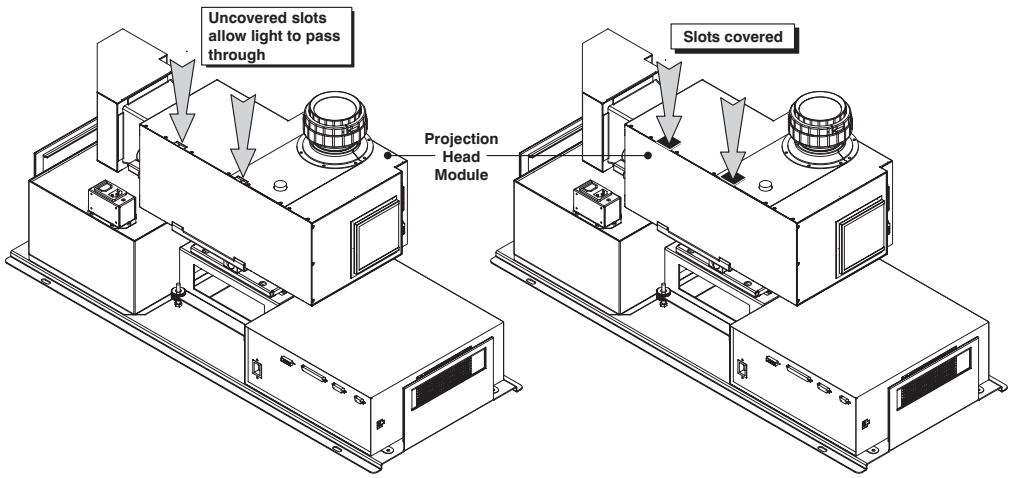


Figure 10. Cover slots in PHM

For RPMSP-D100U ➤ *NOTE: When changing the configuration of the D100U projector you must also change the position of the adjuster on the bottom mounting plate, as well as install a new PHM mounting bracket to suit the new orientation of the optical unit.*

1. Assuming the projector is off and unplugged, disconnect all cable connections made to the PHM and DLM.
2. Loosen the captive screws securing the PHM and DLM assembly to the adjuster mounting brackets. Figure 11.

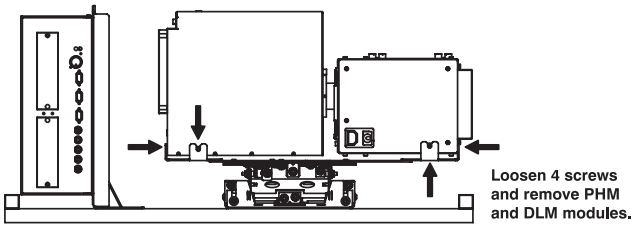


Figure 11.

3. Lift the PHM/DLM assembly off the adjuster and set aside.
4. Tilt the mounting rails to access the 4 screws securing the adjuster to the bottom mounting plate. Remove adjuster.
5. Align the adjuster with mounting holes on the plate labeled “C” (stands for cube configuration). Secure with the 4 screws removed the step earlier.
6. Remove the louvered side panels on the DLM.

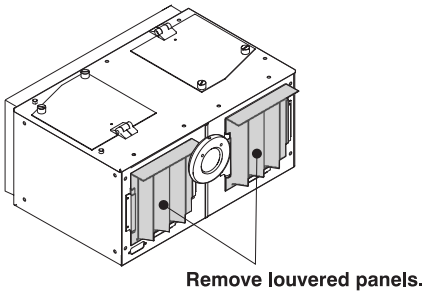


Figure 12.

7. Loosen the single hex screw on the connector between the PHM and DLM. Figure 13.

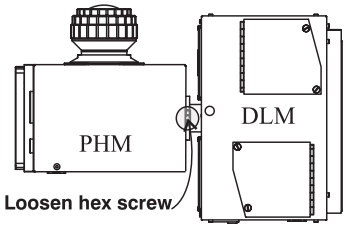


Figure 13.

8. Turn the DLM module 15 degrees counter-clockwise and gently pull the two modules apart. Set the DLM back down in the horizontal position. Figure 14.

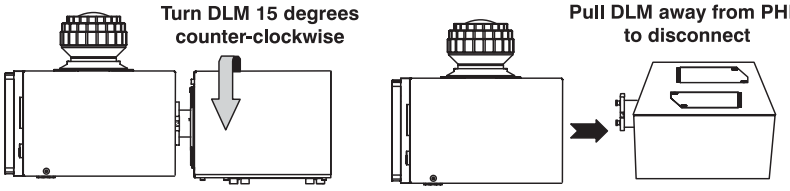


Figure 14.

⚠ Keep the DLM module in a horizontal position. ⚠

9. Flip the PHM 90 degrees (lens pointing up) and remount it over the DLM connector. Tighten the hex screw on the connector to secure both modules together. Figure 15.

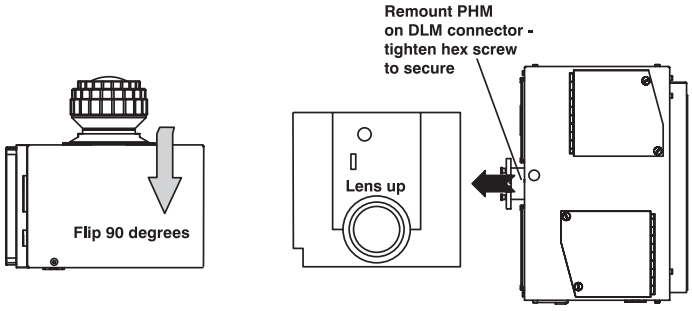


Figure 15.

10. Replace the louvered side panels removed in Step 6.
11. Remove the PHM mounting bracket from the adjuster – 2 screws. (The DLM mounting bracket remains the same.) Figure 16.
12. Place the mounting bracket shipped with the projector for 90-degree configuration over the mounting holes on the adjuster. Figure 16.
13. Secure bracket in place with 2 screws (*provided with projector*). Figure 16.
14. Unscrew the 2 wing nuts on the PHM module.
15. Re-install the wing nuts in two vacant mounting holes on the PHM–see Figure 16.

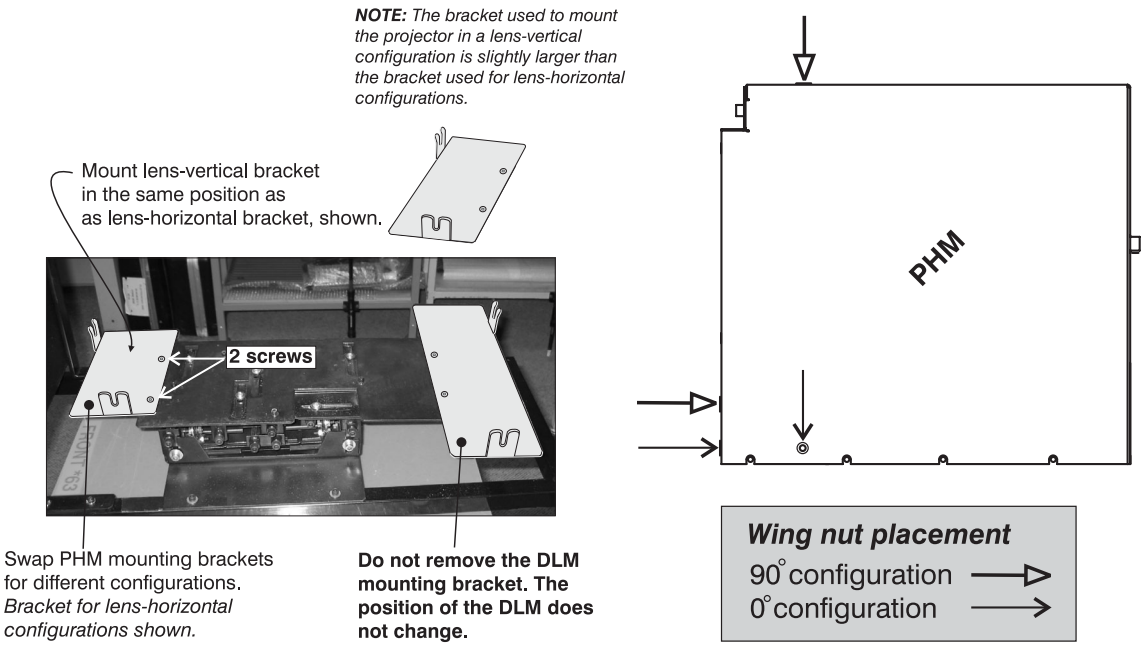

NOTE: The bracket used to mount the projector in a lens-vertical configuration is slightly larger than the bracket used for lens-horizontal configurations.
Mount lens-vertical bracket in the same position as as lens-horizontal bracket, shown.
2 screws
PHM
Swap PHM mounting brackets for different configurations. Bracket for lens-horizontal configurations shown.
Do not remove the DLM mounting bracket. The position of the DLM does not change.
Wing nut placement
90° configuration
0° configuration

Figure 16.

16. Lower the PHM/DLM assembly onto the adjuster and secure to the mounting brackets (2 screws each). Figure 17.

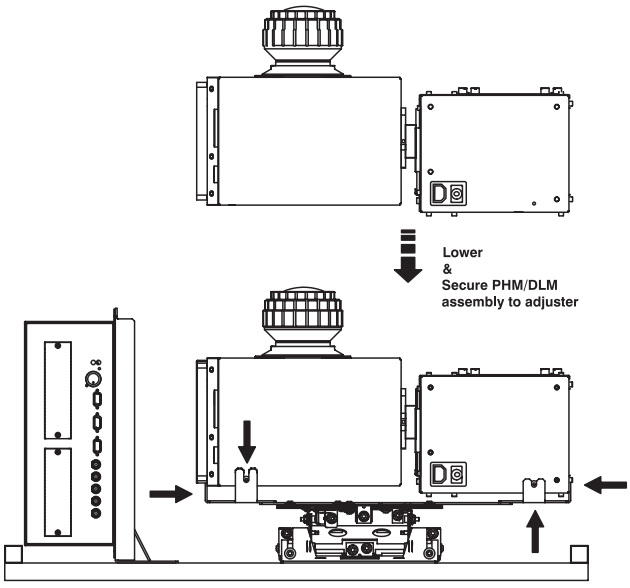


Figure 17.

4. Projector Throw Distance and Mounting

In any projector setup the goal is to get the brightest, sharpest image possible on screen. One of the first ways to achieve this is to position the projector at the right distance from the screen by calculating *throw distance* and then aligning it so that it is perpendicular and the lens is centered to the screen.

Throw Distance ➤

Throw distance (also known as projection distance) is the distance measured from your projector's front surface to the screen. This is an important calculation in any projector installation as it determines whether or not you have enough room to install your projector with a desired screen size and if your image will be of the right size for your screen.

The way in which you calculate throw distance for any RPMSP model directly depends on its configuration. For projectors in a lens horizontal configuration, you can quickly estimate throw distance by taking the horizontal width of the screen and multiplying it by the lens throw ratio. The result of this calculation tells you roughly how far back the projector should be positioned from the screen in order to project a focused image large enough to fill the screen. However, it is very important to always calculate the precise throw distance for the lens type and screen size you're going to use.

In lens vertical configurations, where a first surface mirror is used to shorten the distance between the projector and screen by folding the optical path, throw distance is a little more difficult to calculate, as there are many variables to consider.

Refer to the drawings provided for your specific projector model at the end of this guide for projector dimensions and other technical information.

Mounting ➤

There are four mounting points to each projector. Using the appropriate hardware, mount the projector to a flat, sturdy surface. It is strongly recommended you use a level when mounting to ensure the projector remains level. In some cases, you will need to adjust the 6-axis adjuster to raise the Projection Head Module (PHM) to center or position the lens correctly. After each adjustment, always check the projector is level so as not to introduce unnecessary linearity issues. **TIP:** If you need to raise the PHM by more than 0.5", use the coarse adjustment feet of the adjuster to do so.

Refer to the drawings provided for your specific projector model at the end of this guide for mounting hole location and other technical information.

5. Projection Lens Focus

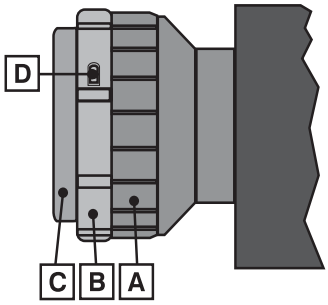
When the projector is first powered up, you can adjust the projection lens to focus and correct any image geometry and lateral color issues that may exist. This is a good first step to setting up your display.

To adjust focus, do the following:

1. Unlock the focus lock ring (A) – turn counter-clockwise.
2. Simultaneously turn both field curvature rings (B & C) in either direction until you reach the desired focus.
3. Turn the focus lock ring (A) in the clockwise direction to lock adjustments.

To adjust the geometry or lateral color of an image, do the following:

1. Loosen the lock screw (D) on the field curvature ring (B) until the field curvature adjustment ring (C) is loose.
2. Turn the field curvature adjustment ring (C) and adjust the image for the best possible geometry and lateral color.
3. Tighten the lock screw to lock both field curvature rings and adjustments.



Where:
A = Focus Lock Ring
B = Field Curvature Ring
C = Field Curvature Adjustment Ring
D = Lock Screw

6. Adjusting the 6-Axis Adjuster

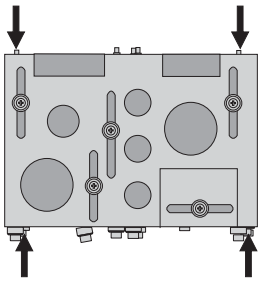
Each projector is designed with a 6-axis adjustment mechanism that allows you to fine-tune the geometry of a displayed image by moving the Projection Head Module (PHM) in varying degrees about the X, Y, and Z-axes. This adjustability is critical during the setup of a tiled display wall where adjacent screens need to be perfectly matched in order to create that single seamless image.

When adjusting multiple units in a display wall, it is recommended you begin by adjusting the end unit on the bottom row. Once satisfied with the geometry of that display, move on to the next one until all units are adjusted. When all units on the bottom row are adjusted, move on to the next row. Continue until all projectors in the display are adjusted.

Tools required: 3/16” ball driver, 3/32” allen key

TIP: *Refer to Figure 19. when adjusting the 6-axis adjuster.*

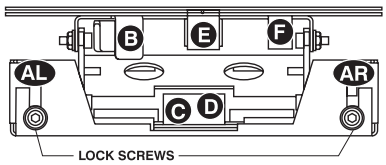
1. Display a test pattern with bold geometric shapes like circles, squares and a solid outer border when setting up a projector for the first time. It makes it easier to identify and correct any distortion the image may be displaying.
2. Unlock the 4 lock screws: two are located below **AR** and **AL** (use 3/16” ball driver) and two are located at the front (Figure 18.) If required, unlock the smaller set screws located on the collar of the other adjustment screws (use 3/32” allen key).
3. Adjust vertical position to center the image. Make the image smaller (Zoom Out) until it fits within the borders of the screen.
4. Adjust keystone and tilt.
5. Enlarge the image (Zoom In) to fill the screen.
6. If necessary, repeat adjustments until the image appears correct.



Unlock 4 lock screws
(2 front, 2rear)
PLUS
All adjustment setscrews

Figure 18.

7. Lock adjustments by tightening the lock screws located at AR and AL and the set screws on the other adjustment screws.



Do not over-adjust adjustment screws. If you feel resistance while adjusting the 6-axis, it means that you have reached the **end of the adjustment range** and should stop adjusting.

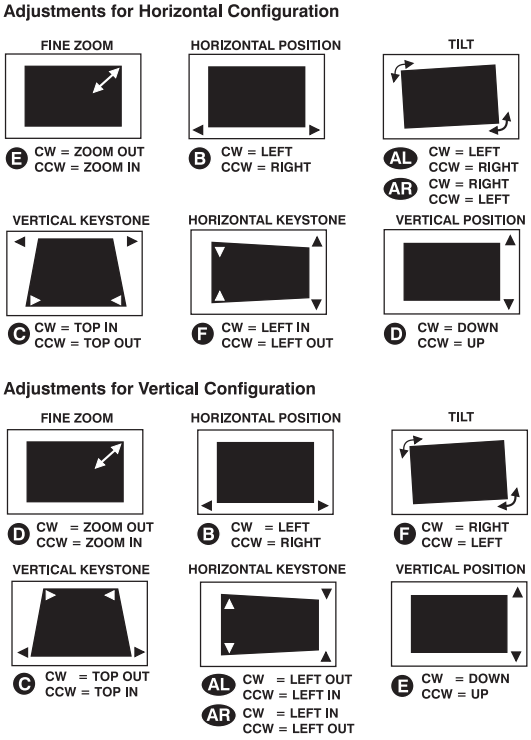


Figure 19.

7. Software Setup Guide for First Time Installations

Most installations require some kind of software setup to optimize settings so the projector displays the brightest and sharpest image(s). Use the following step-by-step guide together with the User's Manual for first time software setup. *The User's Manual describes in detail how to access and change projector software settings.*

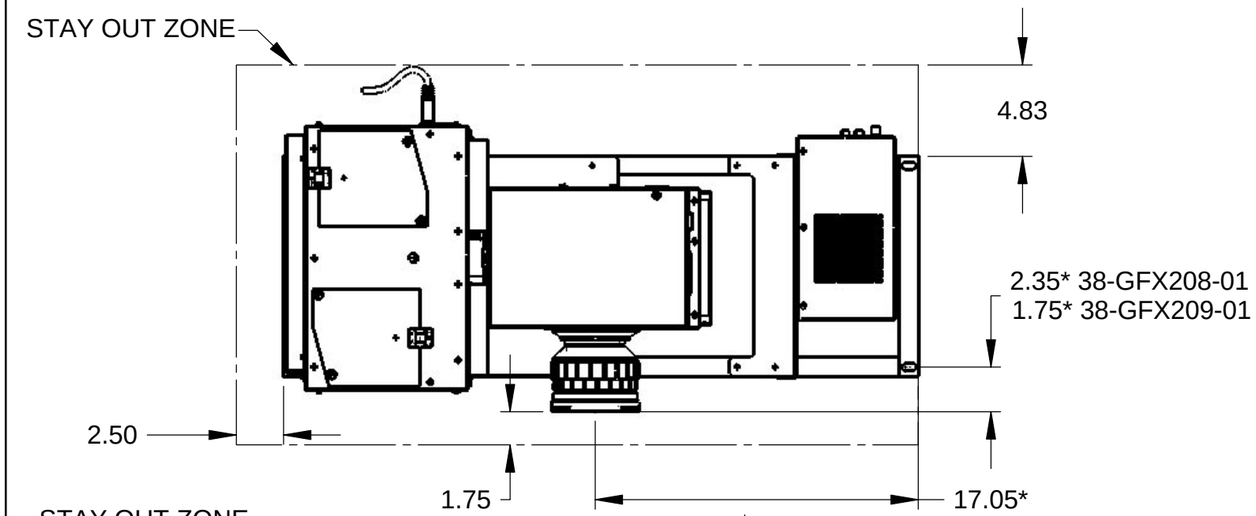
Unless otherwise indicated, instructions apply to all projector models in stand-alone or multi-projector configurations.

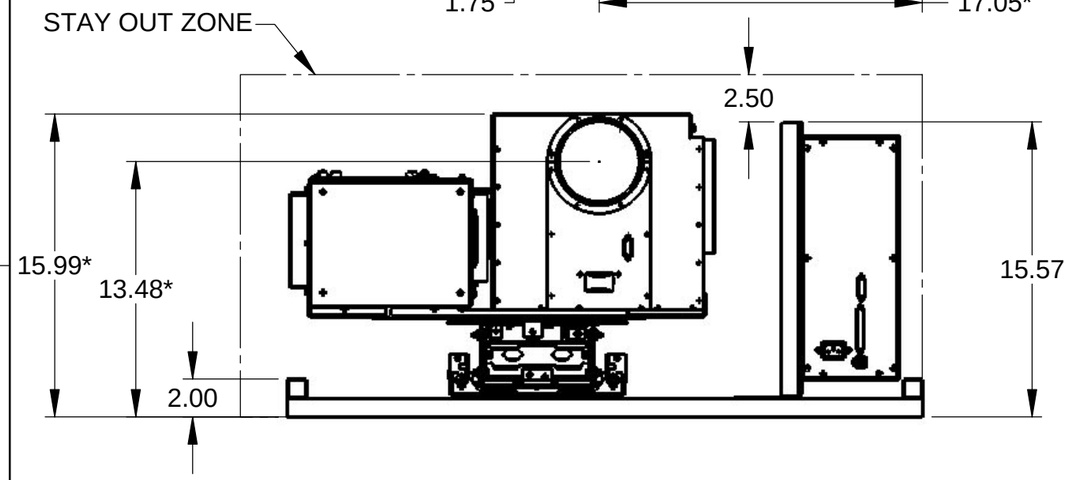
1. Display an external signal.
2. ***For D100U models only,*** select a **Lamp Operation** mode from the *Lamp* menu. Perform all setups in this mode.
3. Assign projector ID number(s).
4. Select **Image Orientation** in the **Configuration** menu and to change the orientation of the displayed image to suit the installation. For example in rear screen installations select "rear" from the pull down list for the image to display correctly from the audiences perspective.
5. Modify **Language** and any settings in *Menu Preferences* to suit your needs.
6. Enable **Broadcast Key** in the *Communications* menu – this enables you to switch between communicating with one or all projectors.
7. Select **Auto Setup**, to give the projector a chance to setup the best possible settings for the chosen incoming signal.
8. Verify **Processing Mode** in *Image Settings* is correct for the chosen signal.
9. Change **Resize Presets** if you want the image displayed at any other resolution other than native.
10. Adjust **Pixel Phase** and **Pixel Tracking** to eliminate any noise in the displayed image – accessible from the *Size and Position* menu.

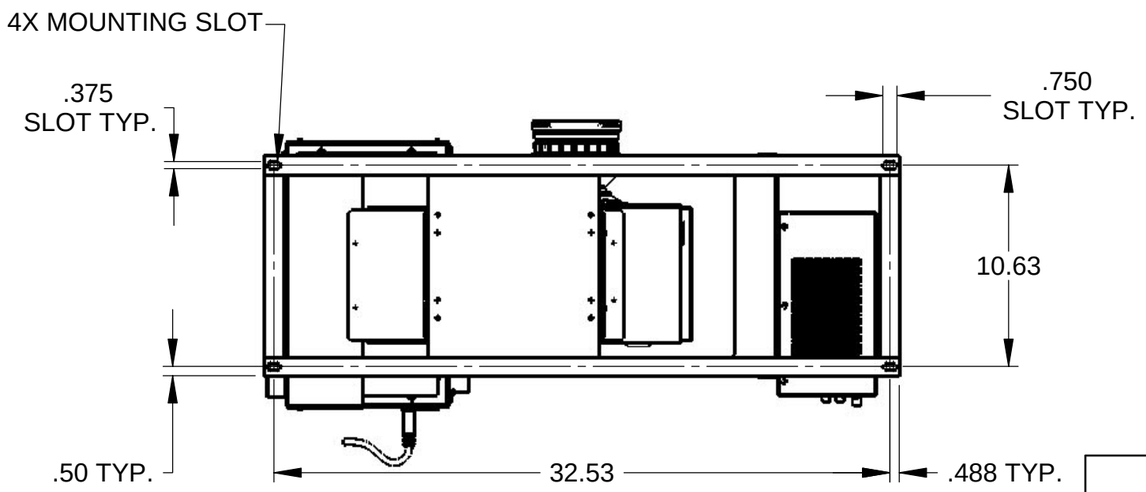
11. Adjust **H-Position** and **V-Position** (in *Size and Position* menu) to re-center the image on screen.
12. Adjust **Size** (in *Size and Position* menu) first until the image is at the desired width, then adjust **Vertical Stretch**. Adjusting one option may have an affect on the other, repeat adjustment if necessary.
13. If required, readjust **H-Position** and **V-Position** to center the image.
14. Perform **Color Temperature Setup**.
15. Adjust black levels and input levels – for quick setup of these, enable **Peak Detector** in the *Input Levels* menu.
16. Select a **Lamp Mode** setting from the *Lamp* menu. Adjust **Intensity** to match lamp brightness of adjacent projectors. 100W recommended.
17. Adjust color primaries, brightness uniformity and edge blending using the detailed procedure provided in the user's manual - *Matching Colors in Multiple Projectors*.

Appendix A
Projector Dimensions & Throw Distance

Refer to the following drawings for model specific dimensions, mounting locations and throw distance information.



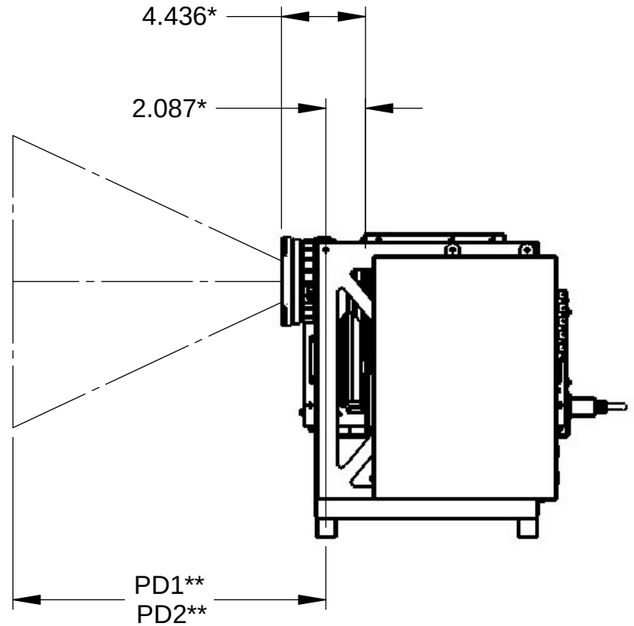




FOR REFERENCE ONLY

DIMENSIONS IN INCHES
* ADJUSTER POSITION IS IN NOMINAL
** PD IS SUBJECT TO TOLERANCE VARIATION OF ± 5%

STAY OUT ZONE REQUIRED TO ACCOMMODATE
- AIRFLOW
- ADJUSTER RANGE
- CABLE ROUTING



PD1: PROJECTION DISTANCE FROM MOUNTING LOCATION FOR 38-GFX208-01
PD1 = .69 x W" + .67"
W: WIDTH OF THE PROJECTED IMAGE
EXAMPLE: FOR 50" DIAGONAL IMAGE, PD1 = .69x40"+.67" = 28.27"

PD2: PROJECTION DISTANCE FROM MOUNTING LOCATION FOR 38-GFX209-01
PD2 = 1.15 x W" - 1.18"
W: WIDTH OF THE PROJECTED IMAGE
EXAMPLE: FOR 50" DIAGONAL IMAGE, PD2 = 1.15x40"-1.18 = 44.82"

PROPRIETARY
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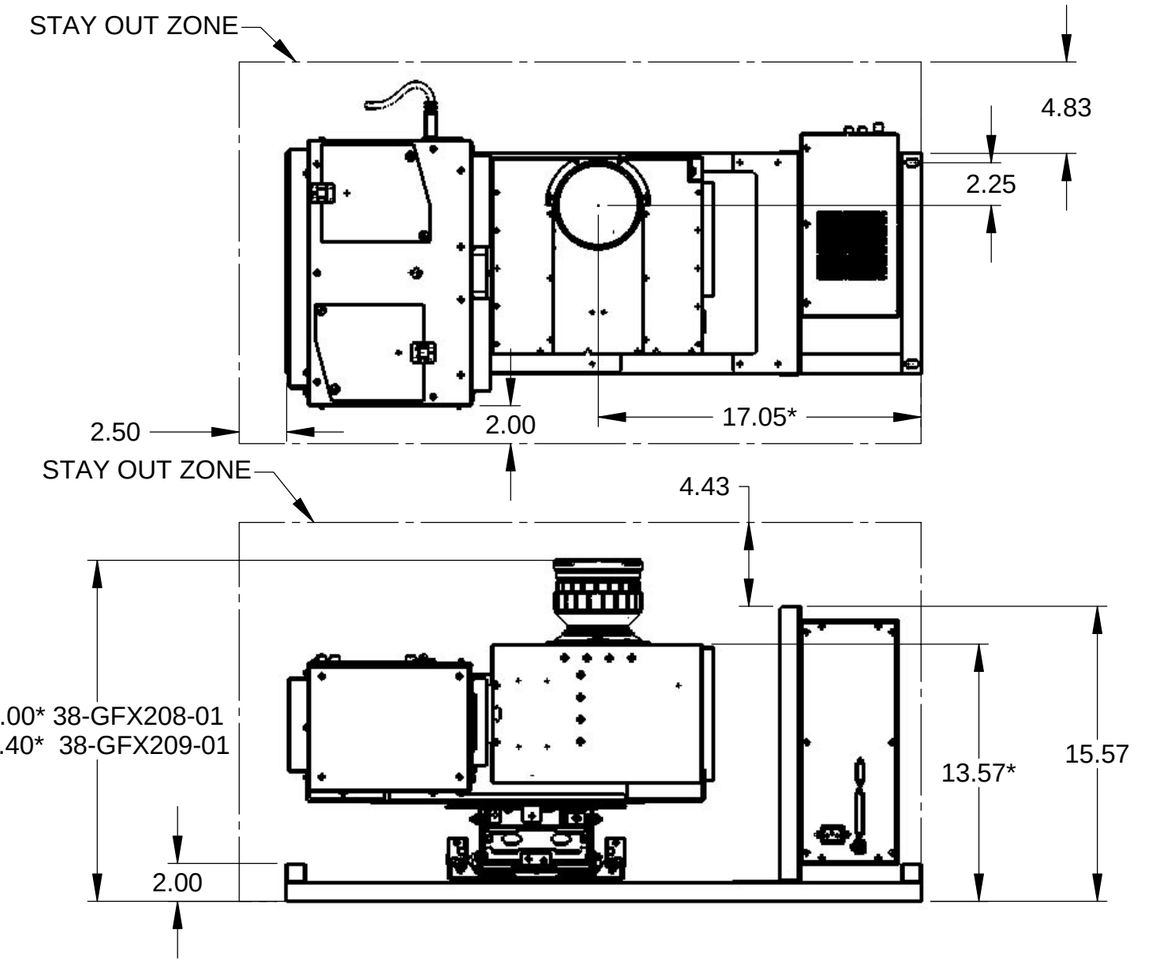
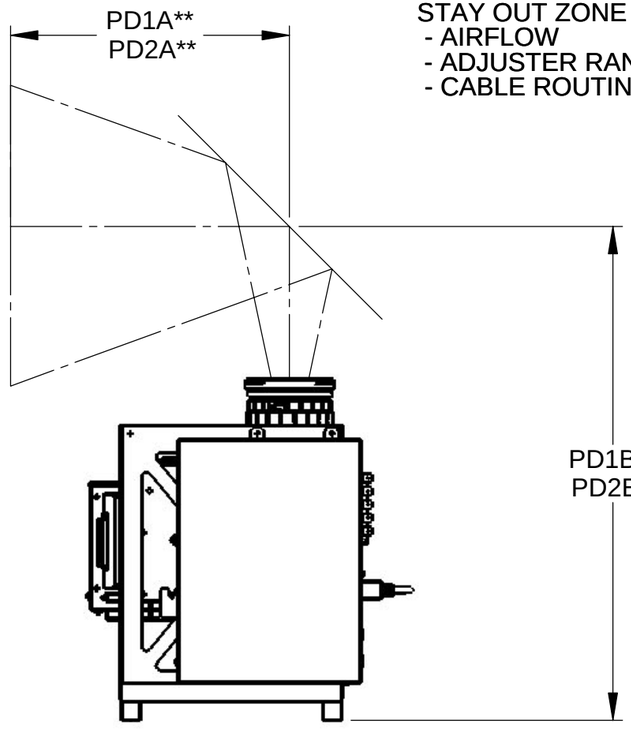
CHRISTIE
809 WELLINGTON STREET NORTH
KITCHENER, ONTARIO, CANADA
N2G 4Y7

SIZE	PART NUMBER	ISSUE
B	38-GFX20X-01, Direct	01

SCALE	MASS	SHEET
1:8	33.36 LBS[15.13 KG]	1 OF 1

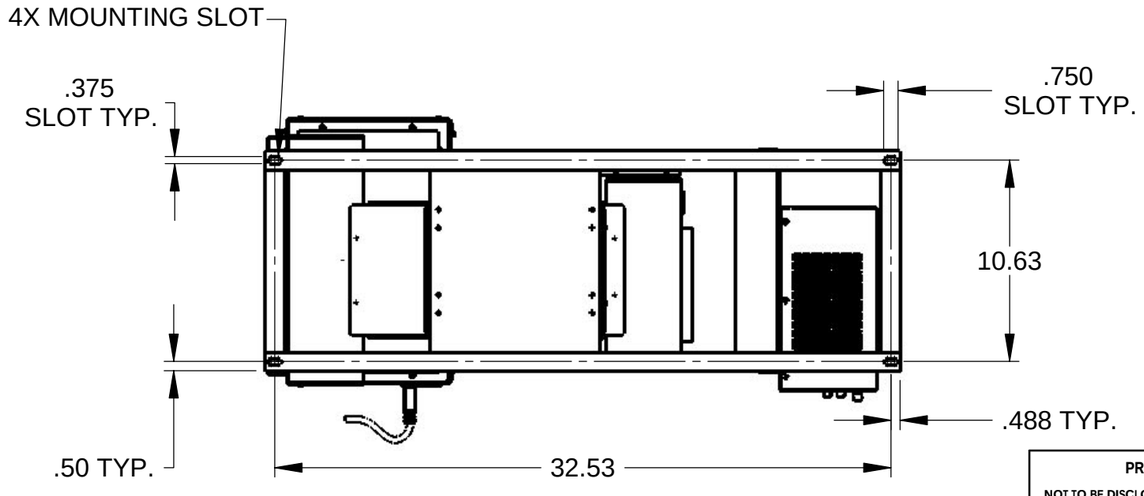




FOR REFERENCE ONLY

DIMENSIONS IN INCHES
* ADJUSTER POSITION IS IN NOMINAL
** PD IS SUBJECT TO TOLERANCE VARIATION OF ± 5%

STAY OUT ZONE REQUIRED TO ACCOMMODATE
- AIRFLOW
- ADJUSTER RANGE
- CABLE ROUTING



PD1: PROJECTION DISTANCE FROM MOUNTING LOCATION FOR 38-GFX208-01
PD1 = PD1A + PD1B = .69 x W" + 16.32"
W: WIDTH OF THE PROJECTED IMAGE
EXAMPLE: FOR 50" DIAGONAL IMAGE, PD1 = .69x40"+16.32" = 43.92"

PD2: PROJECTION DISTANCE FROM MOUNTING LOCATION FOR 38-GFX209-01
PD2 = PD2A + PD2B = 1.15 x W" + 14.47"
W: WIDTH OF THE PROJECTED IMAGE
EXAMPLE: FOR 50" DIAGONAL IMAGE, PD2 = 1.15x40"+14.47" = 60.47"

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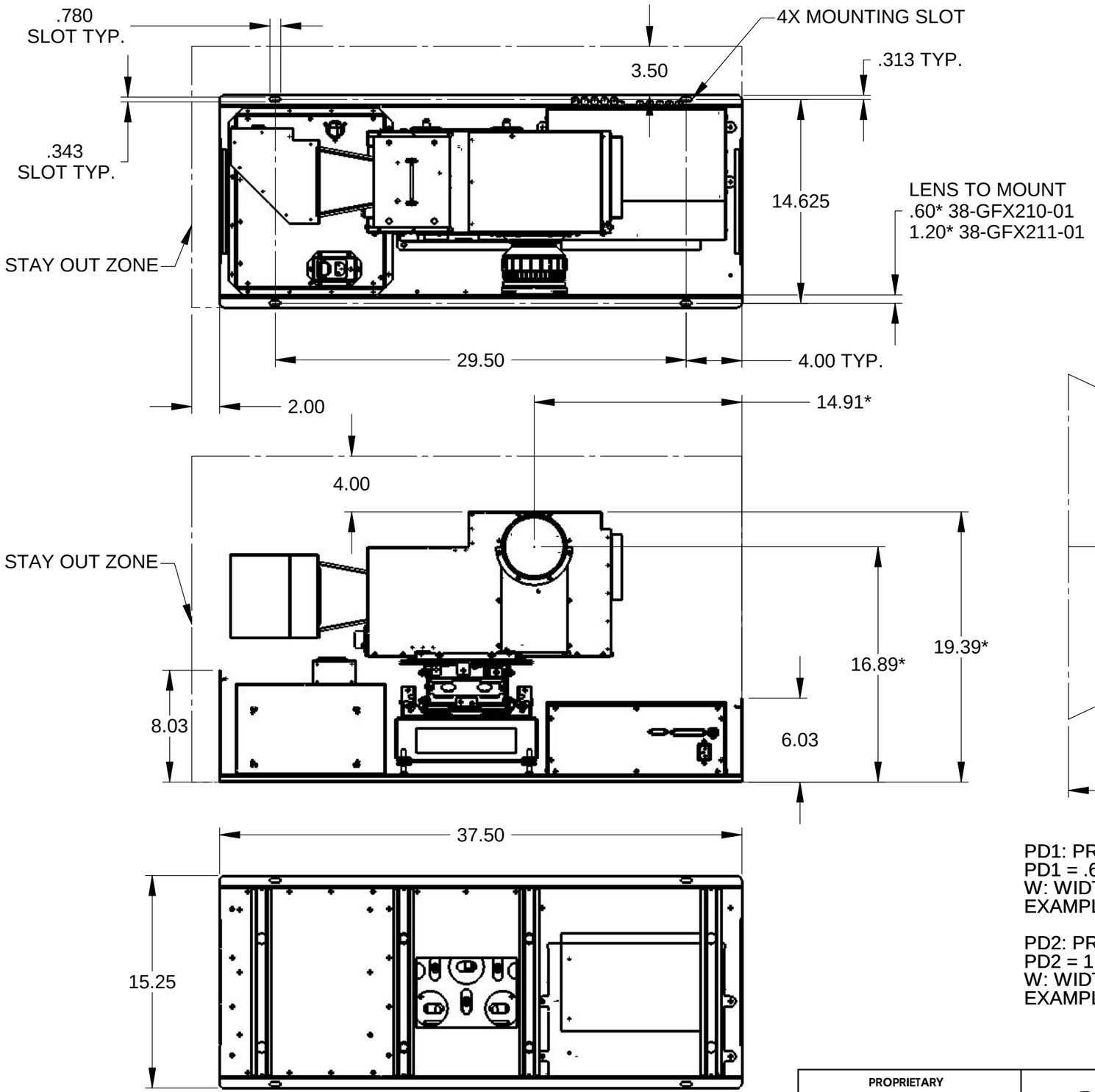
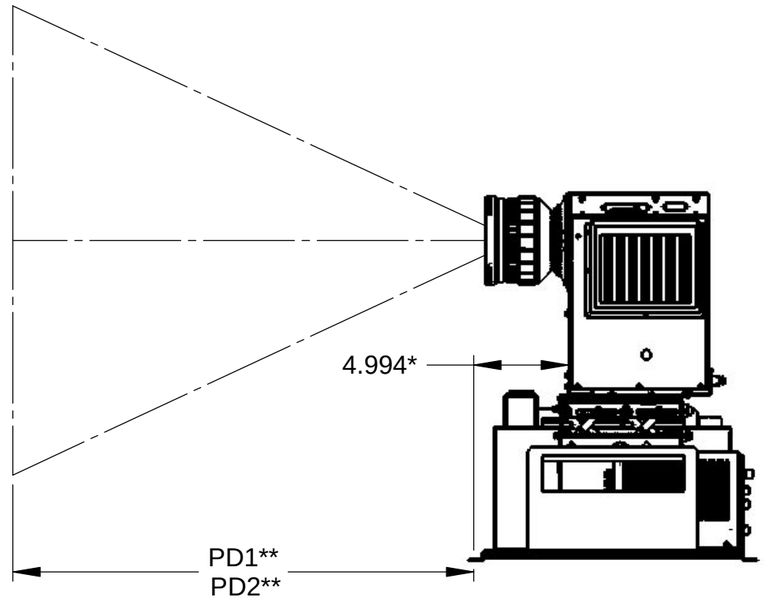
KITCHENER, ONTARIO, CANADA
N2G 4Y7

SIZE	PART NUMBER	ISSUE
B	38-GFX20X-01, Vertical	01

SCALE	MASS	SHEET
1:8	33.36 LBS[15.13 KG]	1 OF 1





FOR REFERENCE ONLY

DIMENSIONS IN INCHES
* ADJUSTER POSITION IS IN NOMINAL
** PD IS SUBJECT TO TOLERANCE VARIATION OF ± 5%

STAY OUT ZONE REQUIRED TO ACCOMMODATE
- AIRFLOW
- ADJUSTER RANGE
- CABLE ROUTING

PD1: PROJECTION DISTANCE FROM MOUNTING LOCATION FOR 38-GFX210-01
PD1 = .69 x W" - 2.24"
W: WIDTH OF THE PROJECTED IMAGE
EXAMPLE: FOR 50" DIAGONAL IMAGE, PD1 = .69x40"-2.24" = 25.36"

PD2: PROJECTION DISTANCE FROM MOUNTING LOCATION FOR 38-GFX211-01
PD2 = 1.15 x W" - 4.09"
W: WIDTH OF THE PROJECTED IMAGE
EXAMPLE: FOR 50" DIAGONAL IMAGE, PD2 = 1.15x40"-4.09" = 41.91"

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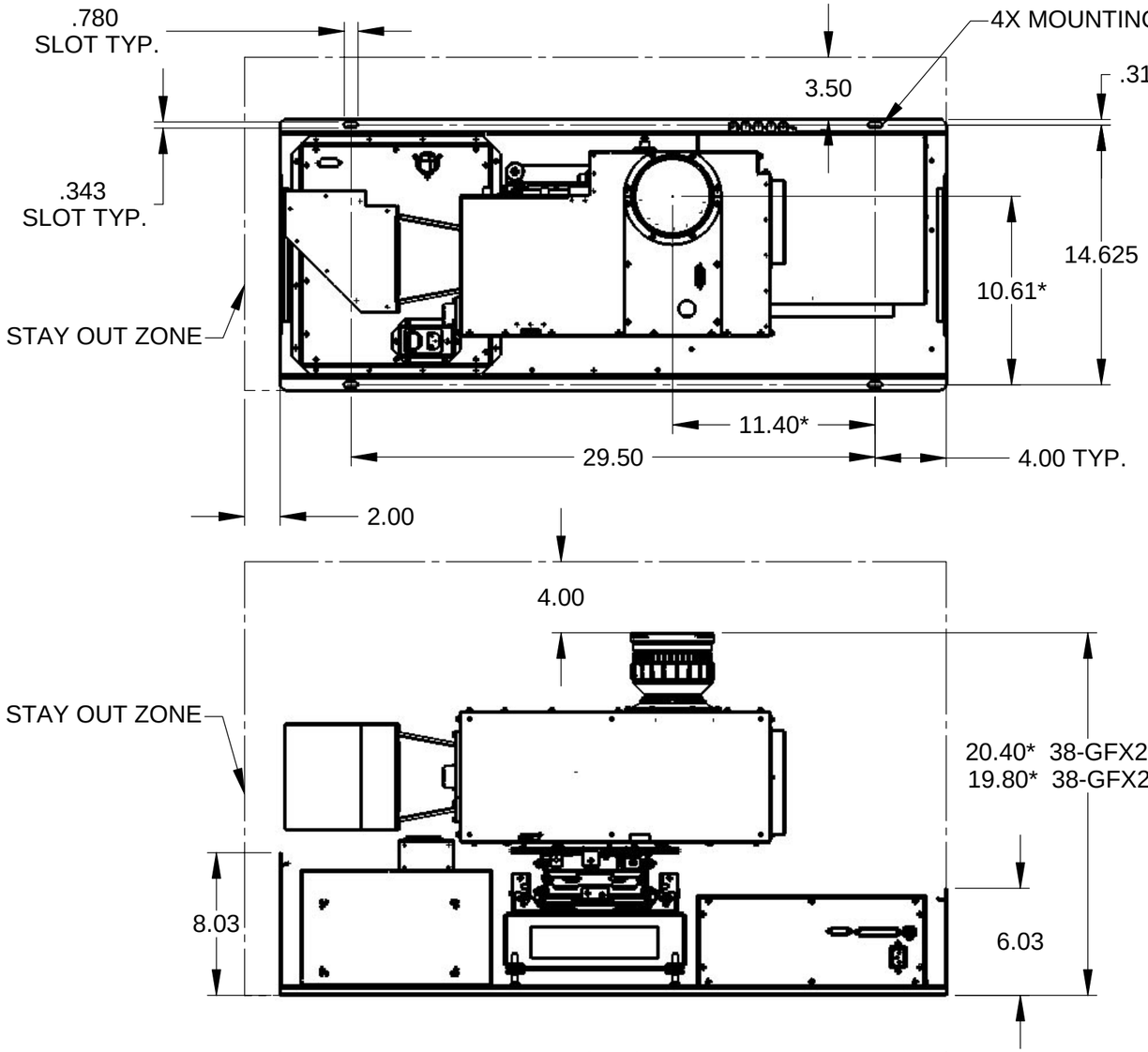
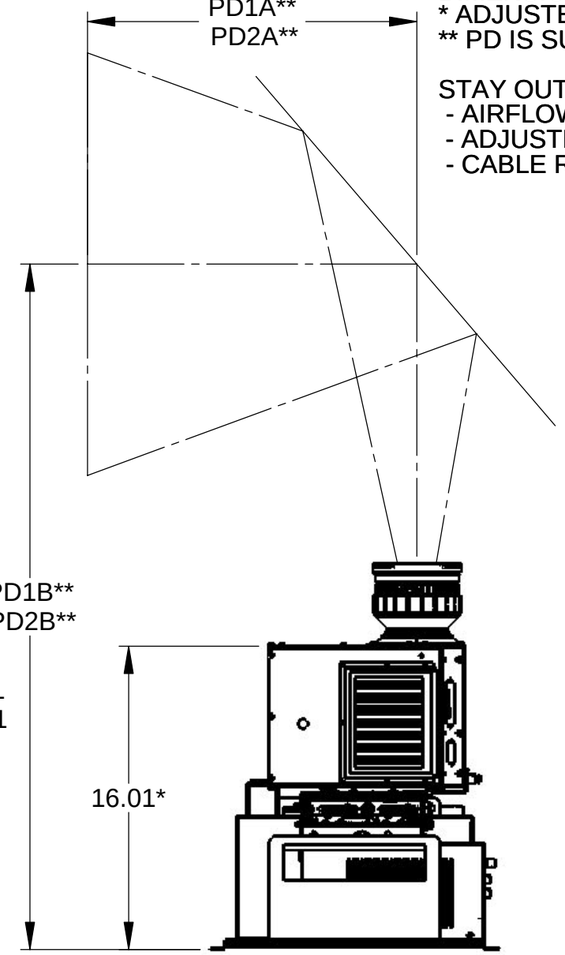
N2G 4Y7

SIZE	PART NUMBER	ISSUE
B	38-GFX21X-01	01
SCALE 1:8	MASS	SHEET 1 OF 1





FOR REFERENCE ONLY

DIMENSIONS IN INCHES
* ADJUSTER POSITION IS IN NOMINAL
** PD IS SUBJECT TO TOLERANCE VARIATION OF ± 5%

STAY OUT ZONE REQUIRED TO ACCOMMODATE
- AIRFLOW
- ADJUSTER RANGE
- CABLE ROUTING

PD1: PROJECTION DISTANCE FROM MOUNTING LOCATION FOR 38-GFX210-01
PD1 = PD1A + PD1B = .69 x W" + 18.76"
W: WIDTH OF THE PROJECTED IMAGE
EXAMPLE: FOR 50" DIAGONAL IMAGE, PD1 = .69x40"+18.76" = 46.36"

PD2: PROJECTION DISTANCE FROM MOUNTING LOCATION FOR 38-GFX211-01
PD2 = PD2A + PD2B = 1.15 x W" + 16.91"
W: WIDTH OF THE PROJECTED IMAGE
EXAMPLE: FOR 50" DIAGONAL IMAGE, PD2 = 1.15x40"+16.91" = 62.91"

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N2G 4Y7

SIZE	PART NUMBER	ISSUE
B	38-GFX21X-01	01
SCALE 1:8	MASS	SHEET 1 OF 1